

## **Consolidated Health Informatics**

### **Standards Adoption Report: MESSAGING STANDARDS: Includes Image Information to Workstations**

#### **Index**

- **Summary**
- **Part I – Sub-team & Domain Scope Identification** – basic information defining the team and the scope of its investigation.
- **Part II – Standards Adoption Recommendation** – team-based advice on standard(s) to adopt.
- **Part III – Adoption & Deployment Information** – supporting information gathered to assist with deployment of the standard (may be partial).

## **Summary**

**Domain: Messaging standard for images that enable images and associated diagnostic information to be retrieved and transferred from various manufacturers' devices as well as medical staff workstations.**

### **Standards Adoption Recommendation: Digital Imaging Communications in Medicine (DICOM)**

#### **SCOPE**

DICOM can be viewed as having two parts: 1) information objects - how images and image-related information are encoded and 2) services – how information objects are exchanged between instruments, either on the network or on offline media.

#### **RECOMMENDATION**

The NCVHS August 2000 report and ANSI-HISB inventory served as background to identify existing standards. No additional standards were identified beyond these sources. Hence, the standards considered by the workgroup were those found in that report. The workgroup decided this is a highly specialized standard that should be endorsed for use internally within an institutional based system, intra-agency, but not for inter-agency exchange.

#### **OWNERSHIP**

National Electrical Manufacturers Association (NEMA) owns the copyright to the standard. DICOM is a standards organization administered by the NEMA Diagnostic Imaging and Therapy Systems Division.

#### **APPROVALS AND ACCREDITATIONS**

DICOM is not an ANSI accredited organization, however they are working with ISO to consider adoption of DICOM as an ISO standard. The DICOM standard was approved by full ballot vote of the committee members.

#### **ACQUISITION AND COST**

Standards are available from <http://medical.nema.org> at a cost ranging from \$50.00 to \$700.00.

## **Part I – Team & Domain Scope Identification**

### **Target Vocabulary Domain**

*National Committee on Vital and Health Statistics (NCVHS) Patient Medical Record Information (PMRI) Messaging Standards Recommendations of 2/27/02*

*Describe the specific purpose/primary use of this standard in the federal health care sector (100 words or less)*

The NCVHS recommended the use of the Digital Imaging Communications in Medicine (DICOM) standards for meeting specific market segments particularly regarding retrieval of information from imaging devices to diagnostic and review workstations. DICOM can be viewed as having two parts: 1) information objects – how images and image-related information are encoded and 2) services - how information objects are exchanged between instruments, either on the network or on offline media.

**Sub-domains** *Identify/dissect the domain into sub-domains, if any. For each, indicate if standards recommendations are or are not included in the scope of this recommendation.*

Domain/Sub-domain	In-Scope (Y/N)
Imaging	Y

**Information Exchange Requirements (IERs)** *Using the table at appendix A, list the IERs involved when using this standard.*

Patient Demographic Data
Care Management Information

**Team Members** *Team members' names and agency*

Name	Agency/Department
Steven Steindel	HHS/CDC
Steven Wagner	VHA
Nancy Orvis	DoD
Jorge Ferrer	HHS/CMS
Marco Johnson (Alternate)	DoD
Lisa Hines (Alternate)	HHS/CMS
Ken Rubin (Alternate)	VHA

**Work Period** *Dates work began/ended.*

Start	End
-------	-----

May 2002	January 2003
----------	--------------

## Part II – Standards Adoption Recommendation

### **Recommendation** *Identify the solution recommended.*

The workgroup recommends the Digital Imaging Communications in Medicine (DICOM) standards regarding retrieval of information from imaging devices to diagnostic and review workstations. On review, the workgroup decided this is a highly specialized standard that should be endorsed for use internally within an institutional based system, intra-agency, but not for inter-agency exchange.

### **Ownership Structure** *Describe who “owns” the standard, how it is managed and controlled.*

DICOM is a standards organization administered by the NEMA Diagnostic Imaging and Therapy Systems Division. DICOM is an industry-based consortium and is not ANSI accredited. The complete bylaws of the DICOM Standards Committee are available on the NEMA web site at [www.nema.org](http://www.nema.org). Working groups of the DICOM Committee perform the majority of work on the extension of and corrections to the Standard. Working groups are formed by the DICOM Committee to work on a particular classification of tasks. Once formed, working groups petition the DICOM Committee to approve work items for which the working group will execute the plan delineated in the work item. Once the output of a work item (generally a supplement or correction proposal) has been completed, it is submitted to Base Standards Working Group (WG6), for their review. Supplements to the standard then go through a public comment period, after which the DICOM Committee authorizes the supplement for letter ballot by DICOM members. Letter ballots require approval by two-thirds of those voting affirmative or negative and return of more than one-half of the ballots sent to members in good standing relative to letter ballots. Since the working groups perform the majority of work on the extension of and corrections to the Standard, the current status and future directions of the DICOM standard are best represented by review of each working group.

### **Summary Basis for Recommendation** *Summarize the team’s basis for making the recommendation (300 words or less).*

The NCVHS sent a letter to the Secretary, DHHS in February 2002 recommending adoption of specific standards based on current status and the August 2000 report. It is this letter that formed the basis for the above recommendations. Interoperability between federal health care systems was the primary factor in forming these recommendations to the CHI Council and any deviations from the NCVHS recommendations reflect this consideration.

### **Conditional Recommendation** *If this is a conditional recommendation, describe conditions upon which the recommendation is predicated.*

Until we are more certain about the ability to understandably exchange both the image

and text portions of a DICOM message it is of limited use for exchanging information between Federal systems. The workgroup notes that the format of the DICOM standard contains a structured report section. HL7 is working on standards for reports related to Clinical Document Architecture through their Structured Documents technical committee and released a first version standard in 2000. DICOM and HL7 are working together to ensure compatibility between the two report standards. The effort will need monitoring to ensure it continues and succeeds. For these reasons a recommendation to the Council for the use of DICOM for inter-agency use is, at this time, not being made.

### **Approvals & Accreditations**

*Indicate the status of various accreditations and approvals:*

Approvals & Accreditations	Yes/Approved	Applied	Not Approved
Full SDO Ballot	N	N	NA
ANSI	N	N	NA

### **Options Considered** *Inventory solution options considered*

During the period from December 1998 through August 2000 the Computerized Patient Record (CPR) Workgroup of the Standards and Security Subcommittee of the National Committee for Vital and Health Statistics (NCVHS) investigated the standards available for patient medical record information and released a report to the Secretary of the Department of Health and Human Services (DHHS) on the current status. Review of this document by the workgroup indicated it was a good general description of both Standard Development Organizations and the standards they supply. A more specific inventory, maintained by the ANSI Health Informatics Standard Board (ANSI-HISB) did not indicate any significant additions to the NCVHS report. Hence, the standards considered by the workgroup were those found in that report.

### **Current Deployment**

Imaging standard is widely deployed. Report format standard is in deployment. DICOM is used in instrument currently deployed by DoD and VHA, extent not determined.

### Part III – Adoption & Deployment Information

*Provide all information gathered in the course of making the recommendation that may assist with adoption of the standard in the federal health care sector. This information will support the work of an implementation team.*

#### **Existing Need & Use Environment**

*Measure the need for this standard and the extent of existing exchange among federal users. Provide information regarding federal departments and agencies use or non-use of this health information in paper or electronic form, summarize their primary reason for using the information, and indicate if they exchange the information internally or externally with other federal or non-federal entities.*

- Column A: Agency or Department Identity (name)
- Column B: Use data in this domain today? (Y or N)
- Column C: Is use of data a core mission requirement? (Y or N)
- Column D: Exchange with others in federal sector now? (Y or N)
- Column E: Currently exchange paper or electronic (P, E, B (both), N/Ap)
- Column F: Name of paper/electronic vocabulary, if any (name)
- Column G: Basis/purposes for data use (research, patient care, benefits)

<b>Department/Agency</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
Department of Veterans Affairs						
Department of Defense						
HHS Office of the Secretary						
Administration for Children and Families (ACF)						
Administration on Aging (AOA)						
Agency for Healthcare Research and Quality (AHRQ)						
Agency for Toxic Substances and Disease Registry (ATSDR)						
Centers for Disease Control and Prevention (CDC)						

Centers for Medicare and Medicaid Services (CMS)						
Food and Drug Administration (FDA)						
Health Resources and Services Administration (HRSA)						
Indian Health Service (IHS)						
National Institutes of Health (NIH)						
Substance Abuse and Mental Health Services Administration (SAMHSA)						
Social Security Administration						
Department of Agriculture						
State Department						
US Agency for International Development						
Justice Department						
Treasury Department						
Department of Education						
General Services Administration						
Environmental Protection Agency						
Department of Housing & Urban Development						
Department of Transportation						
Homeland Security						

<b>Number of Terms</b>
------------------------



Not Applicable

### **Range of Coverage**

Not Applicable – messaging standards

### **Acquisition:** *How are the data sets/codes acquired and use licensed?*

Standards are available from <http://medical.nema.org>.

### **Cost**

*What is the direct cost to obtain permission to use the data sets/codes? (licensure, acquisition, other external data sets required, training and education, updates and maintenance, etc.)*

Not applicable – intended for use by equipment vendors. Cost may be embedded in product cost, but should be very modest.

### **Systems Requirements**

*Is the standard associated with or limited to a specific hardware or software technology or other protocol?*

Yes – this standard will be implemented on specific medical devices by vendors and is outside the domain of the end-user..

### **Guidance:** *What public domain and implementation and user guides, implementation tools or other assistance is available and are they approved by the SDO?*

Implementation guides, tools etc. are available, but not from the developer and are limited in the public domain.

*Is a conformance standard specified? Are conformance tools available?*

A DICOM Test Engine (specifications for a conformance test) and a Workgroup for Conformance exist.

### **Maintenance:** *How do you coordinate inclusion and maintenance with the standards developer/owners?*

The government is a user of this standard and needs to be part of the standard development process.

*What is the process for adding new capabilities or fixes?*

Continual review of developing standard through meetings and communication to standard developers.

*What is the average time between versions?*

Varies with DICOM workgroup.

*What methods or tools are used to expedite the standards development cycle?*

Occurs at workgroups meetings. Each workgroup holds several meetings/year. Standards development can be quite lengthy.

*How are local extensions, beyond the scope of the standard, supported if at all?*

No.

**Customization:** *Describe known implementations that have been achieved without user customization, if any.*

None.

### **Mapping Requirements**

Not applicable – messaging standard.

### **Compatibility**

*Identify the extent of off-the-shelf conformity with other standards and requirements:*

Conformity with other Standards	Yes (100%)	No (0%)	Yes with exception
NEDSS requirements	NA		
HIPAA standards	NA		
HL7 2.x			Y - intended

### **Implementation Timeframe**

Imaging in widespread use, reporting emerging.

### **Gaps**

In maintenance mode for radiographic and ultrasound images, but in development for visible light.

### **Obstacles**

Potential compatibility issues with HL7 though the intent is to have compatibility.

## **Appendix A**

### **Information Exchange Requirements (IERs)**

<b>Information Exchange Requirement</b>
Customer Demographic Data
Encounter (Administrative) Data
Beneficiary Financial / Demographic Data
Customer Health Care Information
Care Management Information
Customer Risk Factors
Referral Information
Body of Health Services Knowledge
Tailored Education Materials
Patient Schedule
Beneficiary Tracking Information
MHS Direction
Provider Demographics
Patient Satisfaction Information
Case Management Information
Cost Accounting Information
Population Member Health Data
Population Risk Reduction Plan
Provider Metrics
Improvement Strategy
Resource Availability
Beneficiary Inquiry Information
Labor Productivity Information
Clinical Guidelines
Customer Approved Care Plan